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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/002,949

11/15/2001

Nobuyuki Takamori

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06/22/2005

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EXAMINER

ANGEBRANDT, MARTIN J

ART UNIT

PAPER NUMBER

1756

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/002,949

Applicant(s)

TAKAMORI ET AL.

Examiner

Martin J. Angebranndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments of the applicant are presented after the first rejection to which they are directed. Rejections of the previous office action, not found below are withdrawn based upon the amendments to the claims.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, at line 7, in place of "substrate, the linear" , please insert - - substrate and the linear - - to make it clear that the while either of the linear expansion coefficient and Young's modulus needs to be greater than those of the substrate, that the linear expansion coefficient needs to be between these values.

In claim 14, at line 7, in place of "substrate the linear" , please insert - - substrate and the linear - - to make it clear that the while either of the linear expansion coefficient and Young's modulus needs to be greater than those of the substrate, that the linear expansion coefficient needs to be between these values.

Claim 10 has two periods at the end, please delete one.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10-16 are rejected under 35 U.S.C. 102(b) as being fully anticipated by

Yokoyama '222.

An optical recording medium with a resin substrate and a magneto-optical recording film is coated with a 6 microns UV cured urethane-acrylate (MH-7210) (example 1), and 4 microns of epoxy-acrylate (EX-841) (example 2).

Urethane, epoxy, polyester and polyether acrylates are disclosed as useful and meeting the material limitation of the claims in the instant specification on page 11 at lines 1-6.

The assertions of the applicant are that the properties alleged by the examiner as inherent are not disclosed in the references applied. Among the arguments is data of undisclosed compositions and their properties. The examiner notes that none of these are disclosed compositionally and it is therefore difficult to determine any inherent properties and these are withdrawn as being merely cumulative to the rejections at hand without adding to the record. With respect to a number of the references applied in the previous office action, the examiner recognizes that it is difficult for the applicant to refute with factual evidence when the compositions used in the prior art are not disclosed and withdraws the majority of these

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rejections. The examiner notes that in the case of Yokoyama '222, the composition is specifically described and is a member of the class of adhesives described by the applicant as useful in section [0047] of the prepub of the instant specification. The examiner notes that data provided by the applicant relates to acrylic ester oligomer, acrylate monomer and a photoinitiator and none of these is either a polyester acrylate, epoxy acrylate or a urethane acrylate and therefore have limited impact on the rejection at hand. Further more this data fails to apply to the full scope of coverage sought, which embraces but is not limited to the UV light curing resins, let alone those disclosed in section [0047] of the prepub. The applicant is invited to submit material data sheets (MSDS or the like) or data from their own measurements for the UV curing resins (MH-7210), (EX-841) and (SD-101) specifically used in the prior art, which describe the young's moduli and linear expansion coefficients for these compositions to address issue and clearly establish patentability over the references at hand. The examiner does not consider the conventional material described by the applicant to be urethane acrylates. The rejection stands.

The instant specification discloses the young's modulus and linear expansion coefficient for polycarbonate as  $2.41 \times 10^9$  Pa and  $6 \times 10^{-5}$  ( $1/^\circ\text{C}$ ) in the tables.

7. Claims 10-16 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yoshioka et al. '649.

An optical recording medium with a resin substrate and a phase change optical recording film is coated with a UV cured urethane-acrylate (SD-101). (example 1) The tilt after 3 mrad.

Urethane, epoxy, polyester and polyether acrylates are disclosed as useful and meeting the material limitation of the claims in the instant specification on page 11 at lines 1-6.

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The rejection stands for the reasons provided above as no further arguments were directed at this rejection beyond those addressed above, noting that the composition is disclosed.

8. Claims 10-16 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Tachibana et al. '709.

An optical recording medium with a 1.2 micron polycarbonate resin substrate and a magneto-optical recording film is coated with a UV cured urethane-acrylate comprising a mixture of a urethane acrylate (ARTRESIN UN-9000) and dipentaerythritol pentacrylates. (examples 6 and 7). The warp is less than 10 microns over the diameter of the disk (table 1(col. 13/14)) even after durability testing for 2000 hours at 80 degree C and 90% RH. The use of substrate which are 0.3-5 mm thick and made of polycarbonate or polyolefins is disclosed. (7/27-32)

Urethane, epoxy, polyester and polyether acrylates are disclosed as useful and meeting the material limitation of the claims in the instant specification on page 11 at lines 1-6.

The rejection stands for the reasons provided above as no further arguments were directed at this rejection beyond those addressed above, noting that the composition is disclosed and there is data relating to the testing of the medium and the resulting warpage. Therefore this has a result described as achieved in the optical recording media using the resinous protective layers meeting the recited limitation in the instant specification.

9. Claims 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tachibana et al. '709.

It would have been obvious to use other substrate thicknesses disclosed as useful in these references, such as 0.5 mm in place of those used in the examples with a reasonable expectation of achieving useful optical recording medium.

The rejection stands for the reasons provided above as no further arguments were directed at this rejection beyond those addressed above, noting that the composition is disclosed.

10. Claims 10-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tajima et al. EP 1031972.

Tajima et al. EP 1031972 teaches with respect to table 3, an optical recording media with a 0.6 mm polycarbonate substrate, an AlN dielectric layer and a 16 micron UV cured protective film having a linear expansion coefficient of  $5.68 \times 10^{-5}$  (1/C°). The optimization of linear expansion coefficient, thickness and Young's modulus to offset the stresses on either side of the dielectric layer to reduce warpage is disclosed. [0036-0044]. Due to the relatively larger thickness of the substrate, the linear expansion coefficient and/or and Young's modulus of the protective layer must be larger than those of the substrate. [0047]. The equation for optimizing the warpage angles is disclosed in section [0042]. The use of 0.5 mm substrates is disclosed. [0063].

Tajima et al. EP 1031972 discloses optimization of linear expansion coefficient, thickness and Young's modulus of the protective layer to offset the stresses on the other side of the dielectric layer due to the substrate to reduce warpage of the medium, but does not use UV curing resins meeting the linear expansion coefficient requirements. It would have been obvious to one skilled in the art to modify the example by doubling the linear expansion coefficient to  $1.13 \times 10^{-4}$  (1/C°), which increases the term  $\alpha T$ , and decreasing the thickness nearly by half to

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increase the second term ( $P/btE$ ), and decrease the third term ( $t/2R$ ) and maintain the same force on the side of the medium opposite the side of the substrate. The increase in the linear expansion coefficient increases the counterforce offsetting that of the substrate generated in the protective layer as a function of temperature and decreasing the thickness of the layer decreases the rigidity of the layer and the amount of counterforce the layer can generate. Decreasing the thickness of the layer also reduces the amount of resins required, which reduces the cost. Further, it would have been obvious to one skilled in the art to use the same optimization with other disclosed substrate thicknesses, such as 0.5 mm.

With respect to the process claims, when equations such as that appearing in section [0042] are described as useful in reducing warpage, the examiner holds that the last layer to be coated/formed would be the obvious choice for optimization to reduce the possibility of warping/radial skew and that optimizing the thickness and mechanical properties of the to reduce the thickness thereby reducing the amount of resin used on each medium and the cost per unit and also reduces optical aberration due to the reduced thickness of the layer through which the light passes in the case of topside irradiation, by choosing resins compositions which have higher linear expansion coefficients.

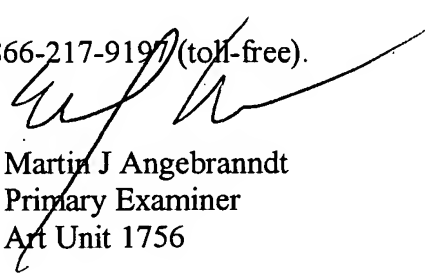
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J Angebrannndt  
Primary Examiner  
Art Unit 1756

06/16/2005